

## FRACTURE OF THE LOWER JAW WITH SEPARATION OF THE GENIAL TUBERCLE.

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A YOUNG man, aged twenty-six years, was admitted to the German Hospital with a history of having fallen, while drunk, and struck his chin against the curbstone. On examining him a wound about an inch and a half long was found on the under surface of the chin. Just to the left of the angle of the mouth was another wound an eighth of an inch long. Three of the lower incisor teeth were knocked out, and there were two openings through the mucous membrane. The jaw was evidently fractured through the symphysis, and so much comminuted as to necessitate its fixation in some manner.

Anæsthesia was begun with ether, but he took it badly and commenced to choke at once. Chloroform being substituted was attended with no better result, the patient getting blue from asphyxia. A stout silk ligature was then passed through the tongue, and the latter firmly dragged out and held, protruding at one corner of the mouth. This improved matters very much, but did not obviate the difficulty entirely.

At this time I regarded the difficulty experienced in administering the anæsthetic as being due simply to the patient not being a favorable subject for its administration, as not infrequently occurs.

In order to fix the fragments, a thick silver wire about a twentieth of an inch in diameter was passed between the sound molar and bicuspid teeth on the right side at their junction with the gums, the space being slightly enlarged with a drill. It was then carried toward the opposite side, crossed where the teeth were missing, and passed between the sound canine and premolar teeth, and the ends twisted in front and cut off close. This fitted the remaining teeth neatly, but not being firm enough it was fastened in place by three loops of

ordinary silver suture-wire, passed through holes drilled in the bone a quarter of an inch below and then brought forward over or between the teeth, and one turn taken around the thick wire and the two ends twisted and cut close. This formed a fairly-firm splint, but still hardly secure enough. Passing to the opening beneath the jaw the soft parts were pushed up out of the way, and thick wire passed through the two lateral fragments, drawn tight, twisted, cut close, and firmly clamped on the bone. Some loose fragments were removed, and a V-shaped piece from the lower portion of the bone found to be lacking. The fracture had begun above in a single line at the incisor



FIG. 1.—Showing lines of fracture and the method of suturing.

teeth and branched below, like an inverted letter Y (*λ*). On passing the finger back the missing piece was found pulled close down to the hyoid bone. Grasping it with the finger and drawing it forward caused the patient at once to breathe easier, and it was no longer found necessary to drag the tongue forward. This piece was brought up and sutured in place with silkworm-gut. The wound was washed out well and, going back to the mouth, two openings in the mucous membrane were sutured shut with catgut. The external wound below the jaw was sutured, and drainage employed for twenty-four hours. The progress of the case was very satisfactory. The mouth,

by the use of detergent lotions, was kept perfectly clean, and there was none of the foul condition that so often complicates wounds of that region. The small opening in the cheek discharged a spicule of bone which had been detached from the under surface of the symphysis, and had evidently been thrust there at the time of the injury and escaped notice, and then at once healed. The wound beneath the jaw closed by primary union, except a small sinus leading to the lower wire suture. At the end of the fifth week union was firm, and the wire around the teeth was removed. Five weeks later the patient returned to the hospital, and the resident physician removed the lower wire, soon after which the sinus closed.

This case was of interest to me because of its rarity. It is the only one of the kind I have had in an experience of at least three or four dozen fractured jaws, and I know of no exactly similar case.

The only reference I have seen or can find to the subject is that which Stimson gives in his "Treatise on Fractures," p. 287. The case referred to was recorded by A. L. Peirson. In the *American Journal of the Medical Sciences* of 1841, p. 186, will be found a review written by George W. Norris of "Remarks on Fractures," by A. L. Peirson, M.D., 1840. In this review is quoted the following case which occurred in Dr. Peirson's practice:

A wagoner was crushed by the passing of the wheel of his loaded wagon over the lower jaw. A double fracture was occasioned, and the detached portion of the bone with the tongue was forced down the throat, so as to nearly occasion suffocation. The accident occurred in the night, but, fortunately, near a house whose inhabitants were awake; and the patient obtained the loan of an iron spoon, with which he contrived to drag the tongue forward, and prevent the impending suffocation, till I was enabled to secure the fragments by wiring the teeth. Great swelling followed, preventing deglutition for many days; but the patient being supported by an œsophagus-tube eventually recovered.

The phenomena of suffocation in my case were caused by the muscles attached to the fragment, the genio-hyo-glossus, genio-hyoid, and probably the digastric, pulling it back and down into the throat.

In order for this suffocation to be produced, it is necessary for these muscles to be detached from the jaw, either taking with them or not a piece of bone. The detachment of the muscles attached to the symphysis in operations on the tongue and jaws has been well known by surgeons to allow falling back of the tongue. Magendie is said to have lost a case from this occurrence, and when it takes place in cases of fracture the violence must have been great enough to thoroughly loosen them. Double fractures of the jaw, one occurring on each side of the symphysis, ordinarily are not accompanied by this difficulty, and the reason is that the muscles remain attached to the middle piece, and the latter is retained in position by its attachment to the lateral bony fragments by the soft parts. I know of a case in which the fractures passed through the neighborhood of the canine teeth, and yet the displacement was very slight. When, however, as in Peirson's case, we have the median fragment torn by the violence away from the surrounding parts, and remaining attached only by the tongue and hyoid muscles, then the latter retract it at once, and suffocative symptoms appear.

My patient as long as he remained perfectly quiet had no trouble, but as soon as the tongue was disturbed suffocation ensued. The clean condition of the mouth, and absence of sup-puration in such a dirty wound communicating with it, is accounted for by the two openings in the mucous membrane having been sewed shut, and thus preventing the secretions of the mouth from infecting the wound, and preventing the wound from pouring fetid pus back into the mouth. The value of the procedure was so marked here as to lead me to suggest its being more generally used in cases of common fractures in which the mucous membrane has been torn, and communication established with the seat of fracture.

The wire splint around the teeth first applied fulfilled its purpose admirably. As soon as completed, the continuity of the jaw was established with a very fair degree of firmness. In these cases of bad fractures of the jaw some means of fixation must be employed, and the question of interdental splints comes up. That good results can be obtained with them is undoubted, but they require to be made at some subsequent period by a dentist.

Even Hammond's wire splint, in use in Guy's Hospital and praised by Bryant, requires to be made over a plaster cast. The after-treatment of a case with interdental splints is more troublesome and disagreeable to the patient than is wiring, and as the latter procedure is one which the surgeon himself can carry out and apply when he is first called to see the case, and as it fulfils the object desired, I prefer it in many cases. The satisfaction to be derived from its use depends on the mode of employment. If a case has enough sound teeth to permit the use of a wire splint, I think one can be applied by the surgeon himself at once. One of the main points to be observed is to use a very thick wire. It should be used not only to avoid the fragments being parted from each other, but also to prevent lateral displacement, and this the rigidity of a thick wire does. It can hardly be necessary, as has been suggested, ever to drill a hole through the teeth; simply reaming out the natural space between them, in order to enable the wire to be passed through, is all that is required. It can then be bent into shape to fit the teeth as closely as possible, and the posterior end brought in front, pulled tight with a pair of forceps, and the two ends then twisted. The three stays applied kept the wire around the teeth firmly in place. In this manner a perfectly serviceable wire splint can readily be made. When it is desired to remove a wire that is buried in the tissues, as was the case with the lower one introduced through the wound beneath the jaw, this can be readily done, as it was in this case, by slightly enlarging the sinus, cutting the wire on one side of the knot with a scissors, and grasping the knot, wind the wire around the end of the forceps until it is removed.